CLAIMS:

1. A kit for use in conducting crystallization experiments, comprising a pre-filled crystallization plate having a plurality of wells, each well of said plurality of wells being open at an upper end thereof for receiving a crystallization solution, a first level of seal including individual seals recessed within each well at a distance below the upper end thereof for temporarily hermetically sealing the crystallization solution in the wells to allow safe transportation and handling of the pre-filled crystallization plate prior to utilization, and a second level of seal including a sealing surface on said plate above said first level of seal for allowing sealing of said wells above said first level of seal in order to allow vapor diffusion to occur after the individual seals have been broken.

2. A kit as defined in claim 1, wherein said second level of seal further includes cover means sealingly engageable with said sealing surface.

3. A kit as defined in claim 2, wherein said cover means include a plurality of individual cover members for separately sealingly covering said wells.

4. A kit as defined in claim 1, wherein the individual seals are individually applied on respective portion cups to provide a plurality of hermetically sealed capsules containing the crystallization solution, and wherein said capsules are individually placed within said wells.

5. A kit as defined in claim 4, wherein said portion cups are sufficiently transparent for allowing examination and monitoring of crystal growth.

6. A kit as defined in claim 4, wherein said individual seals are made of a pierceable material for allowing permanent holes to be defined therein.

7. A kit as defined in claim 1, wherein each of said individual seals include a foil heat sealed in an associated well of said plurality of wells at a distance from a bottom thereof.

8. A kit as defined in claim 7, wherein said foil is made of a pierceable material for allowing permanent holes of various dimensions to be defined therein to control the rate at which vapor diffusion will occur.

9. A kit as defined in claim 1, wherein said pre-filled crystallization plate is a sitting-drop crystallization plate, said wells including respective crystallization surfaces at a distance from the bottom thereof, said crystallization surfaces being isolated from the crystallization solution during transport by said individual seals.

10. A kit as defined in claim 8, further including a reference for providing a visual indication where to pierce said individual seals for allowing examination and monitoring of crystal growth.

11. A kit for use in conducting crystallization experiments, the kit comprising at least one crystallization solution encapsulated in a plurality of individual capsules, and at least one crystallization plate including a plurality of wells adapted to be loaded with said capsules.

12. A kit as defined in claim 11, wherein said capsules are pierceble for allowing holes of different sizes to be permanently defined in the capsules, the size of each hole determining the rate at which vapor diffusion will occur when starting crystallization experiment.

13. A kit as defined in claim 11, wherein each of said capsules includes a portion cup filled with said crystallization solution and closed by a piercable seal.

14. A kit as defined in claim 13, wherein said seal is provided in the form of a sheet material heat sealed to said reservoir to close a top open end thereof.

15. A kit for use in growing crystals by vapor diffusion, comprising a crystallization plate defining a plurality of wells pre-filled with a crystallization solution, at least one seal for sealing said wells with said crystallization solution contained therein, wherein said seal is made of a pierceable material for allowing individual holes to be defined in the pierceable material in order to permit vapor diffusion to occur separately for each of said wells.

16. A kit as defined in claim 15, further including a plurality of references to provide visual indication where the seal is to be pierced in relation to the wells.

17. A kit as defined in claim 15, wherein said at least one pierceable seal is heat sealed to a top surface of said plate over said wells.

18. A kit as defined in claim 15, wherein said seal is provided in the form of individual pierceable foils recessed in respective ones of said wells.

19. A kit as defined in claim 18, wherein said pierceable foils are heat seal to respective portion cups filled with the crystallization solution and fitted within the wells.

20. A method of making a pre-filled crystallization plate, comprising the steps of: providing a crystallization solution and a crystallization plate having

a plurality of wells, and encapsulating the crystallization solution in a plurality of capsules received in said wells.

21. A method as defined in claim 20, wherein the step of encapsulating the crystallization solution includes the steps of molding the capsules, filling the capsules with the crystallization solution and then sealing each of the capsules with a pierceable sheet material.

22. A method as defined in claim 21, further comprising the step of inserting the capsules in the wells.

23. A method as defined in claim 21, comprising the step of molding the capsules directly in the wells of the crystallization plate.

24. A method as defined in claim 23, wherein the crystallization plate and the capsules are molded simultaneously by injecting molten thermo-plastic material into a microplate formed cavity mold with incorporated cavities for encapsulation.

25. A method as defined in claim 21, wherein said pierceable sheet material is heat sealed to each of said capsules.

26. A method as defined in claim 25, wherein said pierceable material is provided in the form of individual foils for allowing permanent holes to be punctured in the foils.

27. A method for carrying crystallization experiments, comprising the steps of: providing a crystallization plate having a plurality of wells pre-filled with a crystallization solution, the crystallization solution being individually sealed in the wells by at least one pierceable seal, piercing a hole in said seal in alignment with a selected well and pipetting a portion of the crystallization

solution contained in said selected well, and for said selected well: mixing, on a drop support, the crystallization solution that has been pipetted with a macromolecule solution to obtain a drop of solution, and sealing said drop of solution in the selected well with said drop of solution separated from said crystallization solution contained in the well, the hole in the seal allowing vapor diffusion to occur between the drop of solution and the crystallization solution.

28. A method as defined in claim 27 wherein the step of sealing said drop of solution in the selected well comprises the step of applying grease directly on said seal about said hole.

29. A method of making a pre-filled crystallization plate, comprising the steps of: providing a crystallization plate having a plurality of wells, dispensing a crystallization solution in the wells, and individually sealing the crystallization solution in the wells by heat sealing a pierceable foil over the crystallization solution in the wells.

30. A crystallization microplate comprising a plurality of wells, each well including a precipitating solution reservoir for receiving a precipitating solution and a drop chamber having a crystallization surface for receiving a droplet of solution containing a macromolecule to be crystallized, said drop chamber being in communication with said precipitating solution reservoir for allowing vapor diffusion to occur between the droplet of solution and the precipitating solution after the well has been sealed, and a flow restrictor provided in said precipitating solution reservoir for retaining the precipitating solution in the precipitating solution reservoir when the crystallization microplate is inverted upside down for carrying out hanging-drop crystallization experiments.

31. A method for carrying hanging drop crystallization experiments, comprising the steps of : providing a crystallization microplate having a plurality

of wells, each well comprising a precipitating solution reservoir and a drop chamber having a crystallization surface, said precipitating solution reservoir containing a volume of precipitating solution, sitting a droplet of solution containing a macromolecule to be crystallized on said crystallization surface, sealing the droplet of solution in the well with the droplet of solution separated from the precipitating solution contained in the well, and inverting the plate upside-down so that the droplet of solution be suspended from said crystallization surface with said precipitating solution being retained in said precipitating solution reservoir.

32. A hanging-drop crystallization support adapted to be inverted over a well containing a crystallization solution, the hanging drop crystallization support comprising an undersurface defining at least one cavity for confining a droplet of solution containing a precipitating solution and a macromolecule to be crystallized, the cavity having a bottom surface and being sized to receive a predetermined volume of macromolecule solution so that when vapor equilibrium is reached between the crystallization solution and the droplet of solution, the bottom surface of the cavity is still completely covered by the solution.

33. A hanging-drop crystallization support as defined in claim 32, wherein a plurality of cavities are provided in said undersurface for receiving respective droplets of macromolecule solution, thereby allowing to conduct several crystallization experiment in a same well.

34. A hanging-drop crystallization support as defined in claim 33, wherein said cavities are of at least two different sizes to respectively contain at least two different volumes of macromolecule solution.

35. A hanging-drop crystallization support as defined in claim 31, wherein said bottom surface is made of a transparent material.

36. A hanging-drop crystallization support as defined in claim 31 wherein the support is made of a plastic material.

37. A hanging-drop crystallization support as defined in claim 36, wherein the support is made from injected molded plastic material.

38. A hanging-drop crystallization support as defined in claim 32, wherein said bottom surface is planar.

39. A hanging-drop crystallization support as defined in claim 39, wherein each said cavity is bounded by walls, and wherein said bottom surface merges with said walls through an inclined wall segment defining an angle Θ of about 45 degrees.